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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,971	10/13/2005	Arild Vik	7439P001	7621

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DIEDERIKS & WHITELAW, PLC
13885 Hedgewood Dr., Suite 317
Woodbridge, VA 22193-7932

EXAMINER	
BEST, ZACHARY P	

ART UNIT	PAPER NUMBER
1727	

MAIL DATE	DELIVERY MODE
03/14/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,971	VIK ET AL.	
	Examiner	Art Unit	
	Zachary Best	1727	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,32-39 and 41-55* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,32-39 and 41-55* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20101209*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

POWER GENERATION APPARATUS COMPRISING FUEL CELL AND REFORMING MODULE

Examiner: Z. Best S.N. 10/527,971 Art Unit: 1727

DETAILED ACTION

1. Applicant's amendment filed February 8, 2011 was received. Claims 1, 43, and 48 were amended. Claims 52-55 were newly added. Claims 1, 32-39, and 41-55 are currently pending examination.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on December 9, 2010 was received. The Komatsu et al. reference (US 2002/0098384) is not being considered because there is no subject matter corresponding to the invention of a power generation apparatus in this reference about magnetic recording media.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 43 and 55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Examiner notes that the instant specification provides that the hydrogen "may all be tapped off for use in a separate process." However, the specification does not have support because it is lacking in specificity for tapped off hydrogen going "to a separate processing unit." Appropriate correction or clarification is required.

Claim Rejections - 35 USC § 103

6. The claim rejections under 35 U.S.C. 102(b) of Claims 1, 32, 34-39, 41-43, 45-46, and 48-51 are rejected as being unpatentable over Kobayashi et al. (US 2002/0006537 A1) in view of Yokota (US 2002/0085967 A1) and depending claim rejections are withdrawn because independent Claims 1 and 48 were amended.

7. Claims 1, 32, 34-39, 41-43, 45-46, and 48-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al. (US 2002/0006537 A1) in view of Yokota (US 2002/0085967 A1) and Yang et al. (US 2003/0129462 A1).

Regarding Claims 1, 35-36,48, and 52-54, Kobayashi et al. teach a power generation apparatus (FCS) comprising a fuel cell (1) including an anode (1d); a reforming module, wherein the reforming module is adapted to reform hydrocarbon fuel into hydrogen (par.

87), the apparatus being arranged so that said hydrogen is fed from the reforming module to the anode of the fuel cell (fig. 1); a recycling arrangement to recycle hydrogen in an outflow stream of the anode of the fuel cell back to the anode (par. 51, fig. 1); and a controlling arrangement to control an amount of hydrogen recycled and to tap off, externally of the power generation apparatus, hydrogen that is not recycled (par. 52). It is Examiner's position that the intended use for the tapped off hydrogen has no patentable weight in the claimed power generation apparatus with regard to the process. Intended use of a known product does not give it patentable weight in the product claim. See MPEP 2106(C). However, Kobayashi et al. do not teach said reforming module is configured to separate said hydrogen from said other components.

Yokota teaches a process and apparatus for generating hydrogen and carbon dioxide, which may be used for a fuel cell (pars. 2, 7, and 59), wherein carbon dioxide is absorbed in to a form of metal carbonates (par. 63) in order to remove carbon dioxide from the hydrogen stream (par. 39). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to create the electrical current generating system of Kobayashi et al. having the apparatus of Yokota wherein carbon dioxide is absorbed in to a form of metal carbonates because Yokota teaches it can remove carbon dioxide from the hydrogen stream.

Additionally, Kobayashi et al. teach the controlling arrangement switches from a discharge position to a circulation position, which in a mechanical valve would run through all degrees therebetween. Yang et al. teach a fuel cell system having a controlling

arrangement to discharge an outflow stream from the anode or to recycle it back through the anode (par. 34). Yang et al. further teaches recycling a portion of the anode exhaust helps maintain a relatively uniform gas composition from the inlet to the outlet of the anode (par. 34). Therefore, it would have been obvious at the time of the invention for one of ordinary skill in the art to modify Kobayashi et al. so that the controlling arrangement could partially discharge some of the anode exhaust in a sustained manner because Yang et al. teaches adjusting the amount of anode exhaust recycled back to the anode helps to maintain a relatively uniform gas composition from the inlet to the outlet of the anode.

Regarding Claims 32, Kobayashi et al teaches substantially nothing except hydrogen is fed to the anode of the fuel cell (par. 87).

Regarding Claims 34 and 37, Yokota teaches a desorption module adapted to allow the release of carbon dioxide (par. 44).

Regarding Claim 38, Kobayashi et al. suggest the reforming module is thermally integrated with the fuel cell (pars. 6 and 87).

Regarding Claim 39, Yokota teaches the desorption module is thermally integrated with the fuel cell (par. 72).

Regarding Claims 41-43, 45-46, 49-51, and 55, Kobayashi et al. teach the recycling arrangement includes a recycle path connecting an outlet of the fuel cell to an inlet of the fuel cell and a three-way valve is fluidly connected in the recycle path between the outlet and the inlet (34, fig. 1).

8. Claims 33, 44, and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al., Yokota, and Yang et al., as applied to Claims 1, 32, 34-39, 41-43, 45-46, and 48-55, and further in view of Keefer et al. (US 2002/0142208 A1).

Regarding Claims 33, 44, and 47, Kobayashi et al. and Yokota teach a power generation apparatus as recited above. However, Kobayashi et al. and Yokota fail to teach a removal arrangement to remove water from the outflow stream of the anode of the fuel cell.

Keefer et al. teach a power generation apparatus comprising a fuel fuell (502) comprising an anode loop (par. 87), wherein a fraction of recirculated anode gas is diverted through a condenser (595) to prevent undesirable accumulation of water vapor as the product of the fuel cell reaction (par. 114). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the condensing means of Keefer et al. in the power generation apparatus of Kobayashi et al. and Yokota because Keefer et al. teach the condensing means will prevent undesirable accumulation of water vapor as the product of the fuel cell reaction.

9. Claims 43 and 55 are further rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi et al., Yokota, and Yang et al., as applied to Claims 1, 32, 34-39, 41-43, 45-46, and 48-55, and further in view of Scholten al. (6,887,607 B1).

Regarding Claims 43 and 55, Kobayashi et al., Yokota, and Yang et al. teach the power generation apparatus as recited above. However, Kobayashi et al., Yokota, and Yang et al. are not specific to a separate processing unit for the tapped off hydrogen.

Scholten et al. teach a fuel cell system wherein the anode exhaust gas may be used in a waste gas burner to heat objects outside the fuel cell system, such as radiators in a house (col. 5, lines 34-63, see specifically lines 58-61). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to send the tapped off hydrogen to a waste gas burner, wherein it could be used to heat radiators in a house, so as to further utilize the anode exhaust outside the fuel cell system.

Response to Arguments

10. Applicant's arguments to the claim rejections have been considered but are moot in view of the new ground(s) of rejection.

However, Examiner wishes to clarify the patentable weight of the phrase "externally of the power generation apparatus for use in a separate process" in view of the agreement contained in the Interview Summary dated September 27, 2010. Applicant contends that Examiner is holding a position contrary to the agreement by "ignoring this language." Examiner has clarified the position in the above rejection to be expanded here.

The intended use of the hydrogen does not contain patentable weight as is cited in the rejection above; however, the language is simply not being ignored. Examiner interprets the claim language as having an effect on the hydrogen being tapped off. In other words, the hydrogen being tapped off must be to the quality or degree that the hydrogen can be used in a separate process. As is noted in the aforesaid Interview Summary, any hydrogen tapped off in the Demissie et al. reference could not be utilized because the hydrogen was

already used up in the burner. Examiner believes that the hydrogen tapped off in the Kobayashi et al. reference meets the limitation of containing "usable" hydrogen.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary Best whose telephone number is (571) 270-3963. The examiner can normally be reached on Monday to Thursday, 7:30 - 5:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Zachary Best/
Examiner, Art Unit 1727

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1727